

SUPPLEMENT.

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THE FEDERATED INSTITUTION OF MINING ENGINEERS.

MEETING IN NORTH STAFFORDSHIRE.

(Continued from page 1169).

The Use of Steel Girders in Mines.

IN a paper on this subject Mr. E. THOMPSON said that the substitution of iron or steel for timber is matter that has for a long time engaged the consideration of scientific and business men, and so great has been the success attending the general substitution of the one for the other that it has become one of the leading considerations in the commercial world how iron or steel can still further be adopted where timber, stone, or brickwork is now used. Although the conditions of the use of girders in mines differ very considerably from their use in building construction, yet the various properties of steel, its strength and durability, enable a girder to show equally satisfactory comparative results when used there for supporting the roof as when used for any other purposes. As an instance of the difference in the working conditions to be met with in a mine, it may be mentioned that the weight to be supported in some places is not only unknown, but is practically irresistible, and the strain is further complicated by pressures both from the top and the sides. Instead of being regular and uniform, the load is varied, and in cases increases with sudden and tremendous force. In addition to these strains, earth movements occur, which tend to displace the supports of the beam, and to allow the framework to collapse. Heavy falls of roof also occur on the breaking of the beam, involving heavy costs in clearing away, and by the inconvenience of the delay caused by the obstruction. In such cases the strength, durability, and ductility of a steel girder, as compared with timber, are seen to great advantage. In the mine where girders were placed here and there amongst timber bars the latter have been broken while the girders remain uninjured. If not too much bent, girders can be reset, crown upwards, or can be straightened for resetting, at a moderate cost, and are but slightly impaired by the process. The relative costs are easily ascertained at any time, being dependent upon the fluctuations of the steel and timber markets. At the present time, estimating the girders at 25 per ton, these sections cost respectively 9d., 1s., and 1s. 6d. per foot. Comparing these prices with best larch timber, the cost of girders is very little in excess of timber, and if the cost of cutting and trimming the timber be included, with an allowance for waste, steel girders will probably be found to cost less per foot, and, in addition, prove much stronger. Steel girders are also more easily handled, and cost less to set in position. The methods adopted in the setting of steel girders are similar to those employed in setting timber bars. The most general modes are to insert the ends of the girder into holes cut in the sides of road, or to support them on walls or wood props. Where side pressure has to be met, girders resting on wood props must be wedged at the joint, to prevent the props from being displaced. Another method is to form a shoulder on the girder to form a support for the head of the prop. It is very important to keep the girders upright; where allowed to cant over their utility is considerably lessened. He concluded by making various suggestions as to the best mode of fixing girders.

Mr. E. B. WAIN said that he thought Mr. Thompson had made out a strong case in favour of a more general use of steel girders underground. He believed that they would be more largely used in the future, now that the girders could be bought at a cost only slightly more than that of good larch bars. For use in main roads where there was no active movement in the roof or sides, the advantages of steel over timber bars were evident, but he must confess that he had some doubt whether it would be advisable to use the girders in newly-packed gate-roads, and especially in inclined seams such as those worked in that district, where, in addition to the sinking of the roof, there was also more or less side-thrust on the higher side of the level roads. Whatever supports were used under such conditions were liable to be disturbed and damaged, for the force was, as the author had remarked, "practically irresistible," and he did not think it was good policy to put too substantial supports in a newly-made gob-road. The roof must sink, and although it was often necessary to put in some sort of bars, they should

as far as possible, fixed so that they would not offer such resistance to the sinking, as would prevent the mass coming down evenly and regularly, or they would cause fracture. He thought, too, that in many cases it would not be good policy to use girders as props in the working face. Unless very great care was taken in setting them with a substantial wood lid at each end, there would be great difficulty in cutting them out in the wastes. In these two positions, as bars in newly-made packed roads, or as props in the working face, he should hesitate to use girders in the place of timber, but for main-road work and general repairs he was satisfied that there were all the advantages in the use of steel bars which were claimed for them by the author. Even if the bars could not be reset when damaged or bent, he thought that their value as scrap would more than cover the difference in cost between the steel and larch bars. He had recently done some repairs in a road 10 feet wide, which was lined with steel girders 22 lbs. per foot over five years ago. The roof was very wet and the ground was the heaviest he had to deal with, but although the girders had been severely punished and were twisted bodily, he found there was little difficulty or cost in straightening them, and they had been reset in the same length of road. Larch timber 12 inches diameter in a similar position had been renewed three or four times since the girders were set, so it was

not difficult to make comparisons in favour of the steel bars. One of the objections to the use of girders had been that it was sometimes difficult to prevent them reeling and to attach them firmly to the props at the ends, but the appliances which had been described in the paper appeared to meet the difficulty if they did not add unduly to the cost of the setting. He had not found any difficulty from the bars reeling where care was taken to fix two or three light stretcher pieces between the bars and where the covering was done properly. In starting a new length of road, it might be found useful to couple the first two or three bars together with light screw or cotter pins passed through holes in the web of the girder, to prevent them being reeled by a sudden blow; but after the first few bars were set there should be no difficulty. If, however, the makers would put on the market girders with broader flanges than those mentioned in the paper, there would be less fear of canting; and there was no doubt, as there was a greater demand for this class of work, more suitable sections would be rolled. As it was, he could not find in any dealer's list girders with flanges equal to the depth, which appeared to be the most suitable section for pit bars. In conclusion, he should like to put on record some compression tests of props he, with other members, saw made by Professor Goodman on the occasion of the visit of the institute to the Yorkshire College last year. They were as follows:—Norway prop, 6 feet long, girth 1 foot 7½ inches, broke under load of 90·8 tons; Norway prop, 7 feet long, girth 1 foot 11 inches, broke under load of 50 tons; steel girder, 6 feet long, 5 by 4 by 50 lb. per yard, 5 sq. in section, bent 5½ inches under load of 81·05 tons; steel girder, 8 feet long, 5 by 4 by 50 lbs. per yard, 5 sq. in section, bent at 96·8 tons, and continued to bend at 40 tons. In each case care was taken to keep the props exactly vertical—i.e., in the direct line of the pressure. The props were splintered to matchwood at the pressure given above, but the girders showed no sign of fracture.

Mr. J. J. PAEST said the use of steel girders or joists of H section underground in place of timber was a question that had been discussed on more than one occasion in papers brought before the notice of institutes connected with this federation, but he did not think, generally speaking, the economy of steel joists, for bars more particularly, in place of timber, had been fully realised by colliery managers, and for that reason he thought Mr. Thompson's paper was particularly opportune at this moment when the coal trade was in such a depressed condition, and it was so difficult to find opportunities for reducing the working charges. More especially was this the case in a district like North Staffordshire, where the coal measures consisted of an abnormal thickness of soft shales and marls, without any intervening beds of strong sandstones to hold off the superincumbent pressure. It would be recognised that the cost of timber was an unusually heavy item. During the six months ending June 30 he found that the consumption of steel joists at the collieries belonging to the Shelton Iron, Steel, and Coal Company (Limited) had amounted to over 250 tons, or at the rate of 500 tons per annum, and these had been used for supporting the roof and keeping down the floor in situations where timber or brickwork was of no use whatever. They had used them principally in the upper and middle coal measures under conditions that had tested their efficiency and economy in moving ground in a marked degree. As Mr. Thompson had pointed out, steel girders, costing £5 per ton, are equivalent to larch at 1s. 6d. per foot, the breaking strain of the former being practically twice as great as the latter; but when the cost of renewing larch, both for material and labour, was taken into consideration, the balance was greatly in favour of steel under any circumstances, but more particularly was this so in the case of haulage roads and return air courses that were perpetually on the move. So far, his practice had been to line all haulage roads and return air courses with steel bars, as circumstances required; they have not put them into the face for a variety of reasons, but have limited their use to permanent roads.

Mr. MERRIVALE said he was quite in accord with what had been said by previous speakers, but did not quite agree with them as to the first cost. He thought the cost of steel as compared with the timber used in the North of England was much heavier. Why should they use larch at 1s. 6d. when they could get Norway for 6d. or 7d.? The great advantage of steel was not in the fact that the cost in the first instance was not very high, but in the durability. On this point of durability he thought they required further information.

Mr. STOKES asked if they were to expect another paper from Mr. Thompson on the use of steel props in mines, which were now largely taking the place of wood.

Mr. THOMPSON agreed that steel props were being extensively used, and said he was willing to supply information concerning use at a future meeting.

Mr. STOKES said there appeared to be a greater opening for steel props than for girders. The only objection he found to them in the Midland district was their weight and difficulty of withdrawal. He believed that old steel rails were being extensively and successfully used as props.

The discussion was then adjourned, a hearty vote of thanks being given to Mr. Thompson, on the motion of the CHAIRMAN.

The Change of Composition Produced in Air by Flames and by Respiration.

A paper on this subject, read at a previous meeting by Professor Frank Clowes, of Nottingham, was briefly discussed.

Mr. STOKES said there was one sentence in Professor Clowes's paper which he trusted would be taken with caution by those who read it. It was this—"The extinction of a flame of a candle or of a safety-lamp in air does not prove such air to be unfit for respiration." He (Mr. Stokes) thought himself that wherever the flame of a candle would not burn owing to noxious gases, such atmosphere should be unfit for respiration. Probably Pro-

fessor Clowes did not mean it in the way he (Mr. Stokes) had taken it, as unfit for respiration, but that it was not absolutely dangerous to life. He thought any atmosphere in which a candle would not burn was unfit for respiration. He had recently had to investigate the case of two men who lost their lives in an atmosphere in which a candle would not burn. With respect to the experiments, he took a little exception to the way in which those experiments were made. He should like Professor Clowes to have had the experiments repeated with the electric light, or whatever light was used, in the jar.

Professor MERIVALE agreed with the last speaker that attention should be drawn to that paragraph, but they must not forget that the tests with the candle were for two purposes. They knew that if they wanted to live they could not do so with safety if the air was vitiated. What they required was a more delicate test. He thought the gas flame was a flame which might be used. If the gas flame went out men could not live. If the gas flame would burn men could live. Probably that was what Professor Clowes had in mind when he wrote the paragraph referred to by Mr. Stokes.

Professor CLOWES, in reply, said it was quite wrong to state that if a candle flame would not burn one must not go into such an atmosphere. He based that statement upon his own experiments. But Dr. Haldane had breathed air in which a candle had been extinguished without inconvenience or without any harm whatever. He should hesitate to go and preach to working colliers that they should be careless, but he did not think he need hesitate to bring a statement of that kind before a society like that. With respect to the criticism as to the method of experiment, the experiment was not made by simply holding a flame at the top of the jar in which the flame experiment was being made, but the flame was lowered to the depth of a fourth or a fifth of the jar. He had repeated the experiment by a second method which fully confirmed the first, although it was different in procedure, and he had no doubt of the close correctness of those results. Every precaution was taken against the mixture which had been prepared for the experiments being different.

On the motion of Professor MERIVALE, votes of thanks were accorded to the North Staffordshire Institute and to Colonel STRICK and the officers of the Staffordshire Artillery for the use of the room.

Colonel STRICK acknowledged the vote.

Mr. MAKEPEACE proposed a vote of thanks to the President for his able conduct in the chair.

This was seconded by Mr. T. E. STORRY and carried. On leaving the hall the members were divided into two parties—one visiting the Electricity Works at Hanley, where they were received by Mr. E. J. Hammersley, the Mayor, and Mr. Lobley, the borough engineer; and another party going for a drive through Trentham Park.

The Annual Dinner.

In the evening the members dined together at the North Stafford Hotel, Stoke, Mr. E. B. WAIN, President of the North Staffordshire Institute of Mining Engineers, occupying the chair. The company, which numbered about 100, included besides most of those attending the annual meeting, Mr. Woodall, M.P., Alderman E. J. Hammersley (Mayor of Hanley), and Mr. J. Lobley (borough engineer of Hanley). Letters of apology were received from Messrs. James Heath, M.P., C. Bill, M.F., D. H. Coghill, M.P., Mr. L. K. Shoobridge, Mr. G. Menzies, Mr. W. D. Phillips, Mr. Harold Wright, and others.

After the loyal toast, the CHAIRMAN proposed "The County and Borough Members," remarking that they did not yet know if the new Parliament was a good one or a bad one, but it had the merit of having enrolled upon its list of members two ex-Presidents of the North Staffordshire Institute of Mining Engineers. (Hear, hear.) It might be that the new Parliament would not attempt any fresh mining legislation, but that was doubtful, and while they had in the House two such able representatives as Mr. Woodall and Mr. James Heath they might be sure that their business ability and knowledge of mining matters would be devoted to the interests of colliery proprietors, colliery workmen, and mining engineers. (Applause.)

Mr. WOODALL, M.P., in responding, alluded to the possibility of Parliament having to address itself to further legislation with regard to the management of mines, and expressed his confidence that when the opinion of Parliament had taken form on the statute book their body would apply themselves to the due carrying-out of any such legislation. (Hear, hear.) The Chairman had told them that the new Parliament was as yet untried; he might have added that it was practically unpledged. Never was there a Government called into office with so free a hand as to the course it regarded as calculated to serve the best interests of the country, and however widely they, as active, public-spirited men, differed in their views, all would earnestly join in hoping that the new Government, with its strong majority, and with a term of office before it which was not likely to be a short one, would be able to do much for the furtherance of the best interests of the country and for the promotion of those practical ends which all had at heart. (Hear, hear.)

He thought they might take it that the signs which seemed to have hovered about them for the last year were now developing in a fulness of promise that we were on the eve of better trade. (Applause.) Those who had consulted the Board of Trade returns for the past month would be gratified by many of the signs there given; for example, in the increase of the value of imports by something near three millions, a large proportion being in raw materials to be employed in our manufactures. Exports for August also showed an increase over the corresponding period of last year of something like £1,900,000, and there were evidences, although the figures were not large, of an improvement and a hopeful sort of picking-up with regard to the iron and steel trade. (Hear, hear.) There was, further, an astounding and almost incredible increase in the exportation of machinery for mining purposes, amounting to 82 per cent., and to show

that the increase was a continuous one, during the eight months of the present year there had been an increase as compared with the previous year of not less than 64 per cent. They were familiar with the extraordinary development in Continental countries of mining operations, and of the mechanical and engineering facilities which had gone ahead to such a surprising extent within comparatively recent times, and it was impossible for them to be indifferent to the severity of the problem of Continental competition. It was, therefore, a happy thought which prompted a joint committee of employers and workmen from the southern part of the county to send a sort of mission to Belgium and Germany to enquire and report as to the causes which enabled these foreign competitors to send so largely into this country as they had done their productions of girder iron. We had yet to wait for the precise letter of their report, but there had been allowed to leak out some indications of the conclusions at which the deputation had arrived, and he supposed it might be taken as authoritative that they had come to the conclusion that although low rates of wages and longer hours were undoubtedly factors which no sensible man could overlook, these were only elements in the question and not determining considerations. This, he was bound to say, coincided with and confirmed the views expressed by his colleagues in the Royal Commission on Technical Instruction, and pointed out the enormous advantage which these rival countries had by their scientific attainments and their study of the technique of business in competing with us. He hoped that this conclusion would be accepted by such a practical body as that institute, and that the weight of their authority would be given in encouragement of a closer study of technical points bearing upon their important industry, and that the movement which had had such an extraordinary impulse in recent years would be guided into safe and practical lines, calculated to produce great benefits for the business in which they were concerned. (Hear, hear.) It would, however, be a short-sighted policy if they ignored the relationship which coal mining bore to other manufactures and enterprises of the country. It was impossible for them to prosper unless there was a wholesome state of activity in regard to the other manufacturing enterprises of the country, and that consideration ought never to be lost sight of by those interested on behalf of the capitalists and those who were the advisers of the working class engaged in the colliery business. Both would be culpable if they overlooked the co-relationship between one great interest and all other manufacturing enterprises of the country which were so much dependent upon the fuel which they had to produce. (Hear, hear.) Having referred to the ingenuity which was being concentrated with the view of reducing this dependence upon coal as a fuel, Mr. Woodall adverted to agriculture, and said that Parliament was deeply pledged to do something for that industry. Agriculturists, he thought, would do well to place little reliance upon Parliament, and very much upon themselves, and they might hope that the large powers which had been given to the residents of the country districts, and the large sums placed at their disposal for technical education, would enable them at any rate to wipe away the reproach—strong free-trader as he was, he thought it a reproach—that we were dependent upon other countries not much more favoured than our own for butter, dairy produce, and poultry. Whether this could be effected by the provision of light railways or the regulation in a more equitable sense of the burden of taxation, he honestly believed that they might rely that there would be no differences in effect among the members of the present Parliament. Reverting to the regulation of mines, he said that very much had been undertaken by one Government and carried out by another for improving the conditions under which workmen had to carry on their avocation, and there was no factor more important in the conduct of a great industrial community than that of ensuring the cordial co-operation of the workmen engaged. How glad they ought to be, then, that there was a sign of a return to sounder economic views with regard to the relationships of capital and labour, of which he saw some gratifying indication in the proceedings of the late Trades Union Congress. He trusted that they might look forward not only to a time of increasing prosperity, but also to a time when industries would be carried on with the harmonious, intelligent, and happy relationship of those engaged therein. (Applause.)

Professor MERRIVALE proposed "The Federated Institute of Mining Engineers." He spoke in favour of the educational work of the institute being extended, and said that high as was their standard of original papers, he hoped to see it still improved. If those in the scientific world had anything to bring forward in relation to mining, their institution would gladly give the opportunity. He wished the institute could devise methods of carrying on the mining business without destroying the face of Nature. (Hear, hear.)

The PRESIDENT (Mr. G. A. Mitchell), in reply, said they were met on one common ground with one end in view—the scientific development of the mineral resources of this country. They realised that while they had something to teach they had a great deal more to learn.

Mr. W. N. ATKINSON gave "The Coal, Iron, and Steel Trades of North Staffordshire." He said he hoped and believed that they were now emerging from a long period of depression from which they had suffered. Judging from the reports, there were undoubted signs that better times were in store. He directed attention to the importance of technical education as bearing upon the prosperity of the coal and iron trade, and suggested that it was worth consideration whether more facilities for this instruction could not be provided in the district, instead of having to rely upon Manchester and Birmingham. (Hear, hear.)

Mr. H. M. LYNAM acknowledged the toast, and congratulated the company on the fact that they seemed to be getting out of what appeared to be bottomless pit of depression. They were finding, too, that the long lane of low prices at last showed some sign of a turning. During the last five years the price of ordinary bar iron had fallen by upwards of £4 per ton, which was nearly 50 per cent. of its then value, while it had been most difficult to reduce the cost of production on account of raw materials and wages remaining at a standstill. Seeing the great strain this had put on the manufacturers, it must be some satisfaction to know that North Staffordshire had met it as well as it had. The report referred to by Mr. Woodall had created quite a scare in the minds of many people. Instead of the accepted theory that lower wages enabled the foreigner to produce at a cheaper rate than we, it now appeared to be the effect of more technical education, better work, and superior plant and machinery. He would ask them to take the report as it had come out *cum grano salis*. (Hear, hear.) This country had applied itself to technical study, and large expense had been incurred in the improvement of plant. He believed there were works in this country and in Scotland equal to any of those abroad.

Mr. DE RANCE gave "Her Majesty's Inspectors of Mines." Mr. J. L. HEDLEY, Inspector for Northumberland, responding.

Mr. R. H. COLE proposed "The Visitors," Mr. T. A. SOTHERN and the Mayor of HANLEY replying. The latter alluded to the Diglake disaster, and the noble response which had been made to the appeal for support to the bereaved, observing that he hoped by their conferences and the mutual information they

were able to afford, such a disaster would never occur again. The health of the Chairman and secretary (Mr. J. R. Haines) was also pledged, and the proceedings were of a pleasant and successful character.

THURSDAY.

Messrs. Doulton and Co.'s Works and Messrs. Jas. Macintyre and Co.'s Washington Works, Burslem.

On this day the members assembled at Stoke and proceeded to Burslem to inspect the processes of making china and earthenware. At Messrs. Doulton's the members were received by Mr. J. C. Bailey, and were conducted to the clay sheds to witness the various mixing processes, the removal of impurities, and the preparation of clay for the potter. They next went to the different workshops to see the manipulation of the clay, the glazing, drying, and placing the ware in the ovens. They also had an opportunity of seeing the decorating department, and lastly the showrooms, which rank amongst the finest in the Potteries. At Messrs. Macintyre's the visitors were received by Mr. Woodall, M.P., and Mr. Henry Watkin, managing director. Here they also had an opportunity of witnessing the various processes of potting applied to the beautiful articles for which the establishment is famous.

The Sneyd Colliery and Brickworks.

The members also visited the Sneyd Colliery and Brickworks, where they were received by Mr. W. Heath, Mr. John Heath and Mr. Frost. The No. 1 or upcast shaft is 12 feet in diameter and 1836 feet deep to the return air-cruts. The No. 2 or downcast or winding shaft is sunk to the depth of 1864 feet to the insets, whence cruts pass east and west to six coal seams—the Mossfield, Yard, and Main coal seams on the west, and the Bowling-alley, Holley-lane, and Hard Mine coal seams to the east. The Holley-lane and Yard coal seams, each 3 feet thick, are worked by the spunney system. The No. 3 downcast and winding shaft is 1140 feet deep, and communicates with the Burnwood, Mossfield, Two-feet, and Seven-feet coal seams. The No. 2 winding-engine has two horizontal cylinders, each 36 inches in diameter and 6 feet stroke, fitted with Melling steam reversing gear and Woodworth automatic progressive cut-off gearing. The cylindrical drums are 21 feet in diameter and 7½ feet wide. The engine is capable of raising 1200 tons from the depth of 1864 feet in eight hours. The No. 3 winding-engine has two horizontal cylinders, each 16 inches in diameter by 4 feet stroke, and is capable of winding 800 tons in eight hours from the depth of 1140 feet, owing to the use of the Koeps system of winding. Locked lamps of Mueseler type (bonneted) are used, adapted to burn petroleum by the Heath and Frost petroleum burner for safety-lamps, the cost being only about half that of prepared colza oil, and the light much better. About 1200 lamps are in use at the colliery. Tonite is the explosive used, surrounded by a gelatinous cartridge, the contents of which are liquefied by the explosion, thus destroying any flame or fumes that might otherwise arise. The shots are lighted by a Heath and Frost shot-firing lamp, by which the fuse is ignited in a completely closed chamber. Four shaker-screens of the bar type are in operation at the truck sidings, and a picking-band, by which the coal is carefully sorted. Heath and Woodworth's through-way end-tippers are used; these, with the elevator, screens, and picking-bands, are driven by a horizontal engine with two cylinders, each 8 inches in diameter. Steam is generated in six Lancashire boilers, each 30 feet long and 7 feet in diameter, and two elephant boilers, all worked at a pressure of 90 lbs. per square inch. There are three underground hauling engines driven by steam generated in underground boilers. These furnaces and the exhaust steam of the underground engines produces a ventilating current of 100,000 cubic feet of air per minute, under a depression of 1·4 inch of water in No. 2 pit, and of 68,000 cubic feet of air per minute under a depression of 1 inch of water in No. 3 pit. The surface haulage, on an incline 1800 feet long, is worked by means of an electric motor of three horse-power, and nine coal tipplers at the land sale wharf by another motor of one horse-power. The electric plant includes two dynamos of 15½ kilowatts each, driven by two horizontal engines. There are four dip pumps and one shaft pump. The latter pump, placed at the bottom of the No. 3 shaft, has a steam cylinder 26 inches in diameter by 4 feet stroke, and works a double-acting ram pump 7 inches in diameter. These pumps and the water tanks control the whole of the water.

Luncheon.

In the afternoon the visitors were entertained at luncheon in the Town Hall, Burslem, by Messrs. James Macintyre and Co. and the Sneyd Colliery and Brickworks Company, about 70 being present.—Mr. W. WOODALL, M.P., presided, and was supported by Messrs. S. LAWTON (Mayor of Burslem), W. N. ATKINSON, JOHN HEATH, E. B. WAIN, G. A. MITCHELL, J. R. HAINES, C. M. PERCY (Wigan), and W. HEATH. The vice-chairs were occupied by Mr. T. ROBINSON and Mr. ARTHUR DEAN, directors of the Sneyd Colliery.

After the loyal toasts, Mr. E. B. WAIN briefly proposed "The Visitors," for whom Mr. MITCHELL, in appropriate terms, responded.

Mr. PERCY proposed the toast of "The Hosts." He said he was happy to be present, because he was to some extent identified with improvements that were being made at the Sneyd Colliery. The proprietors of that colliery had realised that improvements might be made in connection with colliery appliances, and they had the courage to go to some expens in the matter. They saw that whilst on board ship something like 2 lbs. per horse power was sufficient, the consumption in pit winding was something like 10 lbs. of fuel per horse power. They were striving to effect economy in connection with colliery machinery. These appliances they were introducing by arrangements with Mr. Benjamin Woodworth and Messrs. Cowlishaw and Co., who lived in their own district. He expressed his belief that what was being done at the Sneyd Colliery would be followed by many collieries in the United Kingdom. (Applause.)

Mr. WILLIAM HEATH responded in a neat speech, expressing his regret that owing to the changes taking place the colliery works were not in such good order as it was expected they would be in shortly.

The Mayor of BURSLEM, in highly complimentary terms, proposed the health of the Chairman, a toast which was very heartily received.

The CHAIRMAN, in responding, said he was glad that the institute had been able to pay a visit to the mother town of the Potteries. Referring to a speech made the previous night, he said he scarcely thought it was for people whose business was connected with the getting of coal to reprobate them for smoky atmospheres, but they were endeavouring to do all they could to improve the condition under which the fuel was consumed. In that district they had mastered some of the difficulties which they had thought to be invincible under industrial conditions like those which prevailed in the Potteries. He should have liked the visitors to have seen the beautiful park which had been created as if by the magic wand of the enchanter out of a dreary waste as it was left by the colliers. They had shown the possibility of cultivating the most refined conditions in art, in music, and in those social qualities which went to elevate the life of the humblest worker, and their chief regret was that the visit was so much of an evanescent and flying character that they were not able to see as much as they would have liked to

show, and which would have enabled them to carry away a better opinion of the Staffordshire Potteries.

This concluded the toast list.

REPORTS FROM THE MINES.

ANGLO-MEXICAN.—The manager, writing from the mine under date August 20, reports as follows:—New Main Tunnel. Good progress continues to be made in this tunnel, the face having advanced 23 feet during the past week, making a total length to date of 1772 feet.—Uprise No. 12, No. 2 level. This uprise was advanced 8 feet during the week under report, making a total to date of 70 feet. The ore in the face of this uprise has improved somewhat since last week, a sample from same assaying \$100 per ton, which, however, I think is a little higher than the average value of the ore.—Uprise No. 11, No. 2 level. Work in this uprise was advanced 6 feet during the past week, making a total length to date of 123 feet. The vein in the face of the drift continues about 2 feet in width, and carries ore assaying about \$22 per ton in gold, the ore in the uprise having kept steadily at about this very same grade for the past three or four weeks.—Main drift north, No. 3 level. Work in this drift was advanced 4 feet during the week under report, making a total length to date of 14 feet. The ore in the face of the drift is of good width, and carries ore assaying about \$120 per ton in gold, the grade having improved somewhat over last week.—Stopes. There is no change to report in the appearance of the stope, and they continue to supply us with all the ore required for the mill.

BAILEY'S REWARD.—Mining report, dated Coolgardie, W.A., August 10: For the week ending 9th inst., work done is as follows:—380 feet level. Driven 10 feet, total 135 feet. The hanging-wall is running its regular course, with a vein of schist heavily mineralised on the footwall side, but carrying no gold. During the week the small vein of quartz mentioned in last week's report widened out to 6 inches, but disappeared afterwards. No quartz visible in face at all now.—Gordon shaft, 50 feet level. South drive extended 2 feet for week, working only one shift, total 200 feet, leaving about 18 or 20 feet more to drive before connecting with Greens shaft. The face is much improved, and widened out to 2 feet. Gold seen in stone in breaking.—Keating shaft. South drive driven 9 feet, making a total of 22 feet from shaft. Face not looking quite so well, reef being much broken and thrown about, and having run rather smaller. About 3 feet wide. No gold visible.—General. With the exception of these drives no other work is being continued this fortnight in the Reward Lease. All the available spare underground men employed in the sinking and timbering of the tailings pit at the battery. We hope to have them finished during the beginning of next fortnight and all other work in connection with them, and shall make a start as soon as possible. The full complement of eight men are at work on the Everard air shaft, north and south stope. Both these stopes are looking well. The usual quantity of stone is being broken and hauled to the surface ready for trucking to the battery when started.—Oil engine. This engine will be ready for a start this afternoon, and provided we are able to procure the necessary amount of fresh water for her cooling tanks, will give her a quiet run by herself for an hour or two, and I hope to give you the result before closing this letter.—(Signed) Tom V. Browne.

BAYLEY'S REWARD NO. 1 SOUTH.—Mining report, dated Coolgardie, W.A., August 22. The work done for the last week is as follows: 170 feet level. Driven 4 feet further north, making a total from shaft of 38 feet. The reef has slightly improved in width and appearance, and is now about 4 feet wide, with a few streaks of hornblende schist through the quartz in the face.—120 feet level. Winsa sunk 3 feet during the past week, making a total depth of 10 feet. We continue to see fine gold during the breaking of the stone. A trial crushing of 10 tons of stone broken whilst sinking the winsa returned in the battery 19 ounces, proving it to be of a good payable quality.—90 feet level. Winsa sunk 8 feet, width of reef about 2 feet, very nice gold seen in stone in the last two days, and has every appearance of going down, total depth of winsa 11 feet.—Battery. Hauled and trucked from dump 62 tons, all of which has gone through the battery. This week all the stone from sinking the winsa at the 90 feet level will be included in the crushing, and should make a marked difference in the return for the fortnight.—(Signed) Tom V. Browne.

BRITISH BROKEN HILL PROPRIETARY.—Mining manager's report for the week ending August 21:—Blackwood No. 1 shaft, 300 level. West crosscut off plat advanced 5 feet, total 13 feet from plat; Face in hard country rock.—200 level. North-east drive started down winsa in No. 1 west crosscut was driven 23 feet. Face in fair grade sulphide ore. We mined 36 tons sulphide ore, assaying 23 per cent. lead, 15 ounces silver per ton, and 24 per cent. zinc. The west crosscut down winsa in western extension, which has been turned of more to the left during the week, was extended 9 feet, and face is now entering sulphide ore of fair value. We broke 7 tons carbonate, assaying 18 per cent. lead and 14 ounces, and 4 tons sulphide, 24 per cent. lead, 15 ounces silver, and 30 per cent. zinc. The winsa in long crosscut off western extension was sunk 6 feet, total depth 32 feet; bottom showing good grade sulphides. We broke 8 tons sulphides, assaying 21 per cent. lead, 15 ounces silver per ton, and 31 per cent. zinc.—Howell No. 2 shaft, 300 level. West crosscut from plat lengthened 8 feet, total 109 feet; country getting softer for driving, and carrying more sulphides. We hoisted 7 tons, averaging 9 per cent. lead, 18 ounces silver per ton, and 16 per cent. zinc.—Marsh No. 6 shaft, 2nd level. We mined 41 tons sulphides, averaging 37 per cent. lead, 9 ounces silver, and 17 per cent. zinc.—100 level. Have nearly finished strengthening and filling in old stope around here.—Marshall No. 6 shaft, 2nd level. We mined 40 tons carbonate ore, averaging 21 per cent. lead, 41 ounces silver per ton from winsa stope.—Junction 300 level. Uprise was risen 4 feet, total height 33 feet. Have also been timbering and dividing off the uprise during the week.—Old stope. We dispatched and sold to Block 14 Mine 125 tons net sulphide ore from main workings during the week, which contained 1258 ounces silver and 41½ tons lead. The following has been agreed from previous shipments forwarded to Block 14 Company, Port Adelaide—viz., 62 tons net first-class carbonates from Marshall No. 6 shaft, containing 2721 ounces silver and 11½ tons lead; also 533 tons second-class carbonates, containing 1713 ounces silver and 7 tons lead. The week's assays vary: Carbonates, from 10 to 33 per cent. lead and 6 to 91½ ounces silver per ton; sulphides, from 3 to 45 per cent. lead, 3½ to 27 ounces silver per ton, and 12½ to 35 per cent. zinc.

BRILLIANT BLOCK.—Mine manager's report for the fortnight ending August 7: Underlie shaft sunk 3 feet, total below No. 7 plat 106 feet. Formation 4 feet wide, with patches of quartz through it. 7 feet level east driven 21 feet, total length 295 feet from shaft. Reef in face 2 feet, 17 dwts.—Stope. Reef 18 inches to 5 feet, 10 to 20 dwts.—6 level west. Reef in stope over level and in bottom of winsa 20 inches, 10 dwts.—6 level east. Reef in stope 3 to 6 feet, 15 to 20 dwts.—4 level west. Two stope near West Boundary reef 2 feet 6 inches, 12 dwts.—4 level east. Four stope on flat reef under level 6 to 18 inches, 16 dwts.

CUMBERLAND GOLD.—Mine report for July: No. 5 level north. This level was driven during the month to a distance of 522 feet north of No. 2 shaft, at which point I ceased driving, the reef apparently pinching out and the level being too hot for the men to work in until a winsa is sunk from No. 4 level. The face shows a few inches only of reef, with about 2 feet of formation, intersected with streaks of ore; the appearance is very unsettled at present. During the month I engaged men on an underhand stope with a view of discovering the character of the reef under foot. After raising about 3 tons the reef pinched out—in fact, the reef has been very bushy all along this level, although the indications have pointed to the

probable proximity of an ore body. I am now crosscutting into the footwall about 30 feet from the end of the level. The country met with so far is very unsettled, with occasional streaks of ore running through the granite. The crosscut is now driven 13 feet. It is my intention to continue this crosscut further, but in the event of nothing meeting with favourable results, I will crosscut into the hanging wall.—No. 4 intermediate level. Four men have been engaged during the month rising from this level towards the point at which the rich reef was struck last year. They have stopped now about 20 feet to the north, and the reef is showing overhead for the entire distance, and apparently making due north perfectly flat.—Stops above No. 4 level north. Four men have been employed stoping above this level. The reef is still patchy, with bunches of really good ore. It is my intention to continue stoping up towards No. 3 level. During the month, after considerable labour and trouble, I managed to clear out the old No. 1 North company's shaft, mentioned in my last report, without any accident. A quantity of timber and malleoch which had come down in clearing the shaft is now being removed from the bottom of the shaft. When this work is completed I intend stoping up from this point, as there is a reef on the footwall showing good looking ore, which is well worth following up.—Southern stops. A party of men working on contract are raising ore at 20s. per ton from below No. 3 level south. I am glad to be able to report that the reef is improving in size and quality, at present showing 3 feet of ore.—Anthony Gallaghe.

CHAMPION REEF.—Mine agent's report for fortnight ending September 9: Garland's shaft. This has been sunk 5 feet, total depth 93 feet 6 inches. Lode 2 feet, assaying 3 ounces 12 dwt. of gold per ton. The 840 foot level north has been driven 19 feet, total length 510 feet 9 inches. Lode 2 feet 6 inches, assaying 1 ounce 22 grains of gold per ton. No. 3 rise in back of level risen 18 feet, total height 71 feet 6 inches. Lode 2 feet 6 inches, assaying 1 ounce 5 dwt., 22 grains of gold per ton. No. 3 rise above the 840 foot level south rises 21 feet 6 inches, total height 101 feet 6 inches. Lode 3 feet, assaying 3 ounces 5 dwt., 8 grains of gold per ton. This is now communicated to the 740 foot south level. The 740 foot level north has been driven 22 feet, total length 718 feet 6 inches. Lode 1 foot 6 inches, assaying 1 ounce 4 dwt., 18 grains of gold per ton. No. 5 rise in back of level risen 18 feet, total height 53 feet. Lode 2 feet 6 inches, assaying 1 ounce 12 grains of gold per ton. The 630 foot level north has been driven 31 feet 3 inches, total height 855 feet 6 inches. Lode 4 feet 6 inches, assaying 1 ounce 18 grains of gold per ton. No. 6 rise in back of level risen 9 feet 6 inches, total height 66 feet. Lode 2 feet 6 inches, assaying 1 ounce of gold per ton.—Ribblesdale's shaft. The 640 foot level north has been driven 22 feet, total length 100 feet 6 inches. Lode 1 foot, assaying 15 dwt., 20 grains of gold per ton. The 640 foot level south has been driven 19 feet, total length 84 feet. Lode 1 foot, assaying 1 ounce 20 grains of gold per ton. The 549 foot level south of east crosscut, of 540 south of shaft, has been driven 37 feet 6 inches, total length 336 feet. Lode 2 feet, assaying 1 ounce 1 dwt., 16 grains of gold per ton. The wings below this level

18 grains of gold per ton. The winze below this level has been sunk 15 feet, total depth 124 feet 6 inches. The lode is 2 feet 6 inches wide, assaying 12 dwts. 12 grains of gold per ton. Rise in back of this level has been risen 12 feet 6 inches, total height 66 feet 6 inches. Lode 3 feet, assaying 1 ounce 8 dwts. 19 grains of gold per ton. Incline winze north of No. 1 west crosscut at 440 feet south of east crosscut, south of shaft, has been sunk 14 feet 6 inches, total depth 183 feet. Lode 3 feet, assaying 14 dwts. 12 grains of gold per ton.—Carmichael's shaft. The 540 feet level north has been driven 31 feet, total length north of east crosscut 97 feet. Lode 5 feet, assaying 1 ounce 14 dwts. 14 grains of gold per ton. Rise in back of level risen 7 feet 6 inches, total height 37 feet 6 inches. This is communicated to 440 north of incline winze (new rise). No. 2 in back of level has been risen 6 feet 9 inches, total height 6 feet 9 inches. Lode 2 feet 6 inches, assaying 1 ounce 5 dwts. 15 grains of gold per ton. There is on the east part of lode 16 feet north of east crosscut. Incline winze below 440 north has been sunk 3 feet 9 inches, total depth 95 feet 6 inches. This is communicated to 540 north rise. Crosscut east of 440 north level has been driven 14 feet 9 inches, total length 14 feet 9 inches. This is to communicate with east part of lode as seen in the 540 feet level.—Rowe's shaft. This has been sunk 3 feet 6 inches, total depth below the 515 feet level 19 feet 6 inches. Lode 1 foot, assaying 1 dwt. 13 grains of gold per ton. The 515 feet level north has been driven 19 feet 9 inches, total length 81 feet. Lode 4 feet assaying 2 ounces 17 dwts. 22 grains of gold per ton. Winze below, the 415 feet level north has been sunk 9 feet, total depth 68 feet. Lode 2 feet, assaying 2 ounces 1 grain of gold per ton.—Stope, Dalyell's shaft. Stope in back of 620 feet south of 530 feet south winze cut 8 fathoms 2 feet 9 inches. Lode 2 feet 6 inches, assaying 1 ounce 6 grains of gold per ton. Stope in back of 620 feet north of 530 feet south winze cut 8 fathoms 2 feet 9 inches. Lode 2 feet, assaying 1 ounce 12 grains of gold per ton. Stope in back of 620 south of 530 north winze cut 15 fathoms. Lode 3 feet, assaying 1 ounce of gold per ton. Stope below 440 feet south of north winze cut 12 fathoms 5 feet 9 inches. Lode 4 feet, assaying 1 ounce 11 dwts. 20 grains of gold per ton. Stope below 440 feet north of south winze cut 11 fathoms 4 feet,

Lode 3 feet, assaying 1 ounce 2 dwts. 18 grains of gold per ton.—Gurand's shaft. Stopes in back of 840 feet north of No. 1 north rise cut 13 fathoms 1 foot 6 inches. Lode 4 feet 6 inches, assaying 1 ounce 9 dwts. 6 grains of gold per ton. Stopes in back of 840 south of No. 1 rise cut 7 fathoms. Lode 3 feet, assaying 1 ounce 5 dwts. 8 grains of gold per ton. New stopes in back of 840 south of No. 2 north rise cut 4 fathoms 1 foot 3 inches. Lode 4 feet 6 inches, assaying 1 ounce 15 dwts. 8 grains of gold per ton. Stopes in back of 840 north of No. 1 south cut 16 fathoms 4 feet 6 inches. No sample; suspended for a time. Stopes in back of 840 south of No. 1 south rise cut 21 fathoms 1 foot 3 inches. Lode 3 feet, assaying 1 ounce 5 grains of gold per ton. Stopes in back of 740 north of No. 2 north rise cut 10 fathoms 3 feet. No sample; suspended. Stopes in back of 740 north of No. 3 north rise cut 11 fathoms 4 feet. Lode 4 feet, assaying 1 ounce 6 dwts. 16 grains of gold per ton. Stopes in back of 740 south of shaft cut 16 fathoms 3 feet 9 inches. Lode 2 feet, assaying 1 ounce 16 dwts. of gold per ton. Stopes below 630 feet south of 740 feet No. 1 north rise cut 15 fathoms 5 feet 6 inches. Lode 4 feet, assaying 1 ounce 8 dwts. 8 grains of gold per ton. Stopes in back of 530 north of No. 7 north the cut 3 fathoms 2 feet. Lode 4 feet, assaying 1 ounce 4 dwts. of gold per ton. Stopes in back of 530 south of No. 7 north the cut 4 fathoms 1 foot 3 inches. Lode 2 feet 6 inches, assaying 1 ounce 7 dwts. 12 grains of gold per ton. Stopes in back of 530 feet south of No. 6 north rise cut 3 fathoms 5 feet. Lode 3 feet, assaying 19 dwts. 20 grains of gold per ton. Stopes in back of 530 north

19 dwt. 20 grains of gold per ton. Stopes in back of 530 north of No. 2 north rise cut 6 fathoms 4 feet. Lode 5 feet, assaying 1 ounce 22 grains of gold per ton. Stopes in back of 530 south of No. 2 north rise cut 12 fathoms. Lode 6 feet, assaying 18 dwt. 18 grains of gold per ton. New stopes in back of 440 north of No. 7 north rise cut 13 fathoms 1 foot. Lode 6 feet, assaying 13 dwt. 6 grains of gold per ton. New stopes in back of 440 south of No. 5 north rise cut 19 fathoms 3 feet. Lode 4 feet, assaying 1 ounce 16 dwt. 19 grains of gold per ton. Stopes in back of 440 north of No. 2 north rise cut 6 fathoms 3 feet 6 inches. Lode 3 feet, assaying 1 ounce 14 dwt. 2 grains of gold per ton. Stopes in the back of the 440 south of No. 2 north rise cut 7 fathoms 3 feet. Lode 6 feet, assaying 19 dwt. 20 grains of gold per ton. Stopes in back of 440 north of rise south of west crosscut cut 8 fathoms 2 feet 3 inches. Lode 5 feet, assaying 1 ounce 9 dwt. 11 grains of gold per ton. New stopes below 440 south of winze at west crosscut cut 9 fathoms 6 inches. Lode 4 feet 6 inches, assaying 1 ounce 2 grains of gold per ton. Stopes in back of 440 south of rise north of shaft 5 fathoms 2 feet. Lode 3 feet, assaying 19 dwt.

No. 3 north rise cut 8 fathoms 1 foot 6 inches. Lode 3 feet 6 inches, assaying 16 dwt. 20 grains of gold per ton. New stop below 340 north of No. 2 north rise, cut 6 fathoms 3 feet 3 inches. Lode 4 feet, assaying 2 ounces 1 dwt. 10 grains of gold per ton. New stop below 340 north of 440 rise south of west crosscut, cut 3 fathoms 5 feet. Lode 3 feet 6 inches, assaying 13 dwt. 1 grain of gold per ton. Stop in back of 240 north of No. 1 north rise, cut 11 fathoms 3 feet. Lode 3 feet 6 inches, assaying 2 ounces 2 dwt. 12 grains of gold per ton. New stop in back of 240 north of No. 1 north rise cut 3 fathoms 0 feet 3 inches. Lode 2 feet, assaying 1 ounce 13 dwt. 13 grains of gold per ton. Stop below 240 south of west at west crosscut cut 15 fathoms 2 feet 9 inches. Lode 4 feet, assaying 1 ounce 11 dwt. 18 grains of gold per ton.—Ribblesdale's shaft. Stop in back of 440 south of No. 2 west crosscut cut 9 fathoms 2 feet 6 inches. Lode 4 feet 6 inches, assaying 2 ounces 12 dwt. 20 grains of gold per ton. Stop in back of 440 south of No. 1 west crosscut cut 10 fathoms 6 inches. Lode 4 feet, assaying 1 ounce 11 dwt. 16 grains of gold per ton. Stop in back of 440 south of east crosscut south of shaft cut 5 fathoms 4 feet 9 inches. No sample; suspended. New stop below north level from east crosscut at 340 south, cut 2 fathoms 4 feet 3 inches. Lode 2 feet, assaying 1 ounce 2 dwt. 22 grains of gold per ton. Stop in back of 340 south of No. 2 south rise, cut 10 fathoms 9 inches. Lode 4 feet 6 inches, assaying 1 ounce dwt. 19 grains of gold per ton. New stop in back of 340 south of No. 1 south rise, cut 4 fathoms 1 foot. Lode 3 feet, assaying 1 ounce 13 dwt. 14 grains of gold per ton. Stop on fold at 340 north, cut 5 fathoms 4 feet. Lode 4 feet 6 inches, assaying 1 ounce 4 dwt. 12 grains of gold per ton. No. 2 stop north of No. 2 rise in back of 240 south, cut 11 fathoms 4 feet. Lode 4 feet, assaying 1 ounce 18 dwt. 20 grains of gold per ton. No. 3 stop north of No. 2 rise in back of 240 south cut 8 fathoms 5 feet 9 inches. Lode 2 feet, assaying 1 ounce 9 dwt. 11 grains of gold per ton. No. 2 stop south of No. 1 rise in back of 240 south cut 11 fathoms 5 feet. Lode 6 feet, assaying 1 ounce 9 dwt. 18 grains of gold per ton. Stop north of No. 1 rise in back of 240 south, cut 6 fathoms 4 feet 3 inches. Lode 3 feet, assaying 1 ounce 6 dwt. 18 grains of gold per ton. Stop on east part of lode in back of 240 south, cut 6 fathoms 3 feet 6 inches. Lode 2 feet 6 inches, assaying 1 ounce 17 dwt. of gold per ton.—Carmichael's shaft. New stop below 225 feet north of north wing cut 2 fathoms 4 feet. Lode 4 feet 6 inches, assaying 1 ounce 6 dwt. 12 grains of gold per ton. New stop below 225 south of north wing cut 2 fathoms 2 feet. Lode 4 feet, assaying 19 dwt. 23 grains of gold per ton.—Rowe's shaft. Stop in back of 315 north of south rise cut 5 fathoms 4 feet. Lode 4 feet 6 inches, assaying 18 dwt. 1 grain of gold per ton. Stop in back of 315 south of south rise cut 6 fathoms 4 feet 6 inches. Lode 4 feet 6 inches, assaying 18 dwt. 12 grains of gold per ton. New stop in back of 315 north of shaft cut 2 fathoms 2 feet. Lode 1 foot 6 inches, assaying 18 dwt. 20 grains of gold per ton. The above stopping is for August.

COROMANDEL.—Superintendent's report for fortnight ending September 9. Prospect shaft. Crosscut east from south. The drift north from this crosscut has been advanced a further 6 feet and suspended. This branch of quartz followed had never assay more than 2 or 3 dwt., and in the present end it has almost disappeared. This machine has been placed to continue the drive of the crosscut east.—Wince below 500 on new shoot. This has been deepened to 75 feet, and suspended. The wince having entered the slide, the ground had become very heavy and dangerous for sinking. A second wince has been commenced 200 feet north of this, and the ground between will now be opened from the latter. Lode is bottom 1 foot wide, assaying 6 dwt. 6 grains of gold per ton.—Rise back 440 west of dyke. Risen by hand labour 4 feet, total 140 feet. This being sufficiently high to meet the 320 feet level, rising has been stopped pending communication with the 320 north of shaft.—300 north of shaft. A crosscut is being driven north-east from this level, on the crosscourse, but has not yet reached the lode. Driveage for fortnight 6 feet, total 23 feet from main drift 320 north of rise, on new shoot, driven 13 feet, total 185. End still in country rock, and hard for driving. 320 south of rise, on new shoot, driven 35 feet, total 162 feet from rise. Lode 3 to 4 feet wide, of quartz throughout, assaying 10 dwt. 12 grains of gold per ton.—200 north on new shoot. The drift north-east from former level has been advanced 20 feet, total 67 feet. A few branches have been passed through, but there is no quartz in present end. 200 south of crosscut, on new shoot, driven 14 feet, total 59 feet. Lode 1 foot wide, assaying 4 dwt. of gold per ton. 200 south of crosscut west of dyke, driven 6 feet, total 22 feet. Lode is 6 feet wide, mixed character, and average assay is 5 dwt. of gold per ton. Rise back 200 north risen 18 feet, total 59 feet 6 inches. Communication with shaft not yet effected. New east shaft sunk 5 feet, total 125 feet. Progress hindered by timbering and a fall of ground. The 200 we have placed a gang to crosscut through the lode at the point of fold. After driving 6 feet they reached the hanging-wall and a drift is now being carried forward on this part of the lode which is worth 1 ounce 5 dwt. of gold per ton.—Trial shaft. The 100 feet level south has been driven during the fortnight 32 feet, total 132 feet. There are branches of lode matter all over the end, but these yield only a trace of gold in the assay.

GOLD FIELDS OF MYSORE.—Mine report for the fortnight ending September 10:—Oriental lode, south shaft. The 280 feet level end north of crosscut on West Balaghat lode has been driven 13 feet, total 68 feet 6 inches. The lode is 4 feet wide. There is no change to note in its appearance from that last reported. Its assay value is now 1 dwt. 3 grains of gold per ton. The end driven south at this level has been driven 13 feet 6 inches, total 74 feet. The lode is 4 feet wide, chiefly of black rock with a little quartz and arsenical pyrites scattered throughout, assaying 2 dwts. 7 grains of gold per ton.—Oriental lode, rise stops over the 280 feet level east of shaft. The lode is 8 feet wide, and is composed of about equal parts of black rock and quartz, assaying 4 dwts. 13 grains of gold per ton. This rise is being put up to open out steeper ground, and we hope to get into richer ground higher up. Stripping down south of north level, finding a body of mixed rock standing in the earth side we commenced to blast it down, and find it about 6 feet thick, assaying 10 dwts. 5 grains of gold to the ton.—The 380 feet level. We have commenced a rise from this level to effect communication with the middle shaft, risen 3 feet. The lode formation is about 4 feet wide, but does not carry any quartz, and is of no value. Rise for stopes over this level 150 feet north of shaft. Lode 4 feet wide, assaying 2 dwts. 7 grains of gold per ton: risen 12 feet. Rise for stopes over the south level 190 feet from shaft risen 12 feet. Lode 6 feet wide, assaying 5 dwts. 8 grains of gold per ton. The water is being drawn out from the 470 feet level, and within four days shall have it reduced, when we shall resume operations there.

shall have it drained, when we shall resume operations there.

HARMONY GOLD.—In a letter dated the 6th ult., the local secretary at Pietersburg, in the absence of the general manager, writes as follows: Sterkloop. Everything is progressing favourably on this farm. The fencing, with the exception of the lacing of the wires, is now completed. The large dam in course of construction at the foot of the fountain will be completed in good time for the rainy season, and should give us more than sufficient water for all purposes during the winter. The new road, which is a short and direct road to the centre of the town, is now ready for traffic, and a great number of wagons have taken advantage of the short cut already. This new road will greatly enhance the value of the erf to be laid out on the farm, as, previous to its being made, one had to make a circuit of over a mile before reaching the homestead, whereas now the distance is only about 200 yards. All the fruit trees and vine cuttings planted some two months ago are thriving splendidly, and should give a good return next season.

KEMPINKOTE.—Mine agent's fortnightly report dated September 9: Garland's shaft has been sunk 11 feet 3 inches, total depth from surface 418 feet. The bottom of the shaft is still in lode assaying 1 dwt. of gold per ton. 345 north drive has been driven 27 feet 6 inches, total distance from main crosscut 94 feet 6 inches. The end is in schist. 345 south drive has been driven 31 feet 6 inches, total distance from main crosscut 103 feet 6 inches. We have passed through about 4 feet of schist, the end is in solid lode, assay 2 dwt. 3 grains of gold per ton.—245 No. 2 winze. In the bottom

No. 1 crosscut 50 west of footwall has been sunk 7 feet 6 inches total depth 7 feet 6 inches. The lode in the bottom is the fall size of the winze, giving an average assay of 8 dwt. 10 grains of gold per ton. There is a seam in it about 8 inches wide, showing visible gold. It has assayed as high as 1 ounce 6 dwt. of gold per ton. 245 south drive has been driven 21 feet 3 inches, total distance from main crosscut 335 feet 9 inches. Lode in the end 3 feet wide, assaying 3 dwt., 20 grains of gold per ton.—246 No. 2 crosscut west, 280 feet south of main crosscut has been driven 12 feet 6 inches, total distance from footwall 18 feet 6 inches. The lode is about 14 feet wide, assaying 18 grains of gold per ton. The end is in schist.—Henty's shaft. During the past fortnight our sinkholes have been engaged in enlarging the shaft at the 341 feet level.—341 north drive has been driven 6 feet 9 inches, total distance from shaft 13 feet 6 inches. About 10 feet north of shaft we have started to crosscut both east and west. The east crosscut has been driven 6 feet and the west crosscut has been driven 6 feet. The ground in these ends is hard schist.—258 No. 1 crosscut west 208 feet south of main crosscut has been driven 6 feet 6 inches, total distance from side of level 16 feet 16 inches. Lode in the end full size of the drive, assaying 4 dwt. of gold per ton.—173 crosscut west, 100 north of shaft has been driven 7 feet, total distance 25 feet 9 inches. The end is in schist.

KINSELLA.—Mine manager's report for fortnight ending August 22: Mill. The mortar boxes are fixed and screwed down, and I hope by the end of the week the framework will be completed, carried and cast; heads and shanks in position. Tramway between the main shaft and mill is being constructed, and erection generally pushed on as fast as possible as the machinery arrives.—Mine. Opening up the lode at water level is being pushed forward with view of grasping the alternate value, angle of dip, and other peculiarities, and by the end of the month hope to have about 700 feet of lode exploited and connected to the main shaft. During the week we have opened up some good battery stane; for particulars you will please find the foreman's report herewith attached. The value of the ore I have not checked, but there has been no difficulty in getting gold freely at time, testing the quality of the ore, as we open it up, will be taken in hand after the mill commences work—Foreman's report. I have the honor to report that during the past fortnight we have continued driving on the lode. At the main shaft the drive south has been extended 31 feet, making total distance driven 87 feet. As stated in my last report, the lode was pinching out and has continued to do so all this fortnight. There is only about 1 foot of stone in face of drive at present, and this is of very poor quality, and has been put by itself. No. 1 shaft south the drive north has been extended 10 feet, making total distance driven 65 feet. The lode here is only about 1 foot wide, and very poor in gold. There is now about 52 feet between end of this drive and the drive coming south from main shaft. I think there is very little stone in this 52 feet, but think it would be wise to continue the drive as it would give us a roadway from main shaft to Nos. 1, 2, and south shafts. The south drive from No. 1 south shaft has been extended 22 feet, total from shaft 71 feet. Lode about 4 feet wide, showing fair gold, but mostly in footwall slab, the headwall slab being poor stone. No. 2 shaft south. Two men have been taken out of north drive, No. 1 south shaft, and put into this shaft, and a start made to drive north to meet south drive from No. 1 shaft. 7 feet has been driven on very nice stone, showing gold freely; I should think equal to 2 ounces to the ton. It is evident there is a good shoot of stone here of over 200 feet in length, with an average of about 5 feet of stone; there now remains about 34 feet to drive to connect Nos. 1 and 2 shafts south, Nos. 2 and 3 are already connected.—No. 1 north. The drive has been extended 24 feet, making total distance 68 feet north of shaft. Lode 6½ feet wide, showing fair gold. In my last report I omitted to state that a body of stone had gone into the headwall side of lode. I broke some of the stone, and could see fine gold through it; this is 15 feet from shaft, and at some future time it would be wise to crosscut into it and see what it is. The total distance driven for the fortnight is 94 feet. We have broken and hauled to the surface about 180 tons of stone.

MOUNT LYSELL.—Copy of mine manager's report for week ending August 14:—Soil prospecting shaft, hanging-wall. The shaft has been sunk a further depth of 8 feet, total 97 feet, sinking in schist and ironstone.—No. 2 crosscut north drive No. 3 tunnel. The crosscut has been driven 1 foot, total 24 feet; pyrites intensely hard, and difficult to break.—South drive No. 3 tunnel. The face has been driven 10 feet, total 423 feet. The country has been easier for working.—North drive, Indicator winze. Seven feet has been driven, total 74 feet. There is a band of very hard rock next the pyrites.—North drive No. 4 tunnel. The contractors have driven 2 feet, total 189 feet 6 inches. There is no change to report.—South drive No. 4 tunnel.—The drive has been advanced 12 feet, total 222 feet. Some very good ore has been seen along the pyrites wall.—No. 2 winze south drive 50 feet level, engine shaft No. 4 tunnel. The winze has been sunk 3 feet, total 27 feet. The pyrites are getting much harder.—South drive 75 feet level. This drive has been advanced 10 feet along the pyrites wall.—No. 5 tunnel. The contractors have driven 7 feet 6 inches, total 1060 feet. The hard country has given place to schist rock. Progress report for week ending August 16:—Hoistage line. Patslaying completed to bank engine shed, and ballasting in full progress. Fixing tracks in bank engine station yard, and laying mine cable. Everything working very smoothly and well.—Smelter site. Retaining walls and main flue making good progress. Foundations for smelter stack in progress, and carpenters engaged framing ready for erect on direct, brick walls sufficiently advanced.—Converter site. Excavation and clearing enlarged to full size, and active progress being made. Smelter siding in desultory progress, as opportunities occur for use of loco.—Brick plant. Additions and alterations being actively pushed on, and will all be completed shortly. Running full time with old plant. New sawmill shed completed, and bed logs ready. Contractor making good progress with his wooden tram for getting logs. Weather beautifully fine.

MILLS' DAY DAWN UNITED.—Mine manager's report for the fortnight ending September 30: Underlie shaft sunk further 6 feet total 132 feet below 9 plat, and timbered up. Having permanent road. 9 level east driven 6 feet, total from plat 34 feet. 9 level west H. W. driven 18 feet, total from plat 318 feet. 18 inches fair stone in face, which has improved. Stopes 12 to 24 inches, median quality. F. W. drive extended 13 feet, total 75 feet. 18 inches heavy mineral stone in face, with leaders through formation. Total 3 feet crushing staff. Stopes 18 inches, good quality. Intermediate drive driven 24 feet. Passed through small leader. May meet reef at any time. 8 level west stope 2 feet 6 inches, good stone. Crosscourses winzes sunk to total of 60 feet, or 18 inches good stone. 6 level east and west, stopes over, average 2 feet 6 inches, very good stone. F. W. stope reef 2 feet, medium quality.

August 17.—North Australian shaft, Byerley level north, Reef in four stopes averages 5 inches, fairly good quality. Byerley level south, Reef in four stopes average from 2 to 15 inches, and varies in quality from very poor to $2\frac{1}{2}$ ounces per ton.—Peabody shaft. Shaft deepened 30 feet, total depth from surface 278 feet. No. 1 south level extended 8 feet, total from shaft 28 feet, reef 6 inches mineral stone.—Wyndham shaft. Shaft sunk 6 feet, total below 1 level 62 feet, reef on south side 8 inches, fairly mineralised. 14 level south driven 9 feet, total length 159 feet, heavy water. 18 level north driven 16 feet, total length 428 feet, reef 18 inches, very white, formation good for gold. 8 level south. Stopes, reef 2 to 15 inches, assay 25 dwt.s.

MOUNT ZEEHAN (Tasmania).—Manager reports for week ended August 13: Silver Queen section. No. 8 lode, Main shaft. Crosscut extended west 9 feet, and intersected middle branch of No. 8 lode, showing small lenses of galena. Shall drive on this branch north to intersect western part of lode as quickly as possible. Concentrator has been run on Zeehan-Montana Company's ore 85 hours, and milled 310 tons seconds for 33 tons 8 cwt. concentrates, containing about 24 tons of lead, and 3031 ounces of silver.—Tributes. E tributes at their 40 feet level have 1 foot of solid galena, a sample of which assayed 77½ per cent. lead, and 107 ounces silver per ton. We expect here a good thing for the company when the tributes' time expires. H tribute looks well, carrying up to 9 inches of first-class of high grade ore. G tributes have been delayed getting their water-wheel at work, but have sampled 14 tons 7 cwt. seconds, which realised £172, netting to the company £34.

NEW GUSTON.—The following cable information has been received from the mine:—"Output, August month. Ore shipped 2028 tons, value (estimated) £18,600; mine expenses £15,650.—Ore shipments. The tonnage for August month, viz., 2028 tons, consisted of four carloads (42 tons) of high grade ore shipped to the Philadelphia Smelting and Refining Company (Pueblo); 10 cars (110 tons) of high grade ore shipped to the San Juan smelter, Durango, and 161 cars (1876 tons) sent to the Silverton smelter." The mine superintendent, under date September 7, reports, viz.:—No. 9 level, south drift stope. Length of stope 140 feet; north portion of stope, height over back of level, 85 feet for 30 feet in length; centre of stope, height over back of level, 73 feet for 27 feet in length, additional portion, height over back of level 67 feet for 25 feet in length; south portion of stope, height over back of level 73 feet for 58 feet in length, average width of ore 3 feet for entire length of stope. Character of ore, iron pyrites. Value: silver 7 to 14 ounces per ton, gold 3-10ths to 4-10ths ounce per ton, copper 2 to 1 per cent.—No. 10 level, south drift, stop, north of wince. Length of stope 27 feet, height over back of level 64 feet, width of ore 4 feet. Character of ore, iron pyrites. Value: 7 to 12 ounces silver per ton, gold 2 10ths to 3-10ths ounce per ton, copper 2 to 4 per cent.—South drift stope. Length of stope 99 feet. North portion of stope, height over back of level 70 feet for 53 feet in length. Ore scattered. Centre of stope, height over back of level 64 feet for 26 feet in length. Centre of stope, height over back of level, 64 feet for 26 feet in length. Width of ore 10 feet. South portion of stope, height over back of level 58 feet for 20 feet in length. Average width of ore, 5 feet. Three classes of ore are being met with:—(1) peacock copper, (2) yellow copper, (3) iron pyrites. Value of ores:—(1) Peacock copper 88 to 103 ounces silver per ton, gold ½ to 1 ounce per ton, copper 33 per cent.; (2) yellow copper 30 ounces silver per ton, gold 4-10ths to ½ ounce per ton, copper 14 to 15 per cent.; (3) iron pyrites 7 to 12 ounces silver per ton, gold ½ to 4-10ths ounce per ton, copper 2 to 4 per cent. The stope continues to look well.—No. 11 level, south drift stope, length of stope 122 feet, height over back of level 50 feet for length of stope; north portion of stope, width of ore 4 feet for 75 feet in length; centre of stope, width of ore 12 feet for 37 feet in length; south end of stope, ore scattered for 12 feet in length. Three classes of ore are being met with, viz., (1) peacock copper, (2) yellow copper, (3) iron pyrites. Value of ores:—(1) peacock copper 85 to 100 ounces silver per ton, gold ½ to ¾ ounce per ton, copper 30 to 32 per cent.; (2) yellow copper 20 ounces silver per ton, gold 4-10ths to ½ ounce per ton, copper 12 per cent.; (3) iron pyrites 7 to 8 ounces silver per ton, gold ½ to 3-10ths ounce per ton, copper 3 to 4 per cent. The stope looks well.—No. 12 level, north drift stope, length of stope 48 feet, height over back of level 14 feet for length of stope; ore scattered throughout porphyry. Character of ore: iron pyrites, with occasional bunches of yellow copper. Value of ore: 14 to 25 ounces silver per ton, gold 2-10ths to 4-10ths ounce per ton, copper 3 per cent.—South drift stope. Height of stope over back of level 28 feet, length 28 feet, width of ore being carried in opening out 20 feet. Character of ore, iron pyrites with bunches of yellow copper and patches of peacock copper. Value of ore, 8 to 13 ounces silver per

ton, gold 2-10ths to 3-10ths ounce per ton, copper 2 to 3 per cent. The stope looks well. In the cutting out stope over the south drift at No. 12 level the ore is becoming narrower as we go south. Some nice yellow and grey copper is now being met with. We hope to commence stoping here in a short time.—No. 13 level, south drift. 64 feet from shaft we have commenced opening in on the south side of crosscut on the porphyry, 10 feet wide, met with when driving the crosscut. Distance driven, 10 feet. There is 35 feet to 40 feet to drive before we get under the ore met with in No. 12 level, south drift. Where we are drifting south the porphyry is exceedingly favourable for the production of ore. I do not anticipate meeting with ore in quantity until we get under the ore body met with at No. 12 level.

TOLIMA.—The directors have received advices by the mail of September 26 from their mines, of which the following is an abstract:—Frias July estimated returns (120 tons) silver, valued at 32d. per ounce (fine), £5412 9s. 5d.; ditto cost, £3291 6s. 8d.; ditto profit, £2121 2s. 9d. The underground agent reports 87 fathoms 1 foot 9 inches of ground expanded, of which 63 fathoms 0 feet 6 inches were productive, leaving 24 fathoms 1 foot 3 inches of unproductive ground. Writing under date of August 15, the superintendent draws attention to the improvement in the grade of the ore raised in July, which averaged on assay 360 ounces to the ton. The 110 fathom east and west levels on the north branch have continued to yield good ore during the month, and in the week immediately preceding the above advices had shown a further improvement, the west end giving 1½ and the east 1½ ton to the fathom. The 130 fathom level west is also reported as improving, the lode yielding favourable bits of mineral, though not sufficient to value; but the superintendent hopes that this station will soon yield productive ground. The 150 fathom level west also gives indications on the hanging-wall branch of improvement. Referring to the shallow adit, the superintendent reports good progress as being made, whilst the general direction of the lode is described as now running favourably towards the Real de Frias workings.—Underground report. Engine shaft was sunk 12½ feet by 10 men, at £270 per fathom, thus being 42½ feet as total depth below the sole of the 140 fathom level. The portion of the main lode sunk upon has improved, and it is now yielding some good saving stuff, and the present prospect is favourable to further improvement. 150 fathom west end hanging-wall side was driven 17 feet by four men, at £75 per fathom, and the lode yielded 10 cwt. of mineral per fathom. 150 fathom west end footwall side was driven 17 feet by two men, at £55 per fathom, and yielded 5 cwt. of mineral per fathom, although the forepart is rather poor. 150 fathom east end was driven 17 feet by four men, at £75 per fathom, and the lode continues poor. 140 fathom west end north branch was driven 15 feet by two men, at £90 per fathom, and the general character of the lode is improved, and it is now yielding some good stones of mineral. 140 fathom east end was driven 9 feet by four men, at £80 per fathom, thus being 321 feet as total east of the west wince; and the lode is rather disordered and is yet poor. 140 fathom east back stope No. 1 was stopped 30½ feet by four men at £25 per fathom, and yielded 4½ tons per fathom. 140 fathom east back stope No. 1A was stopped 18½ feet by four men at £56 per fathom, and yielded 4½ tons of mineral per fathom. 130 fathom west end was driven 14½ feet by two men at £65 per fathom, thus being 504½ feet as total west of the west wince, and the lode is improved and is now giving some good portions of mineral. 130 fathom west back stope No. 1 was stopped 38½ feet by four men at £25 per fathom, and yielded 2½ tons of mineral per fathom. 130 fathom east back stope No. 1 was stopped 36 feet by four men at £36 per fathom, and yielded 4 tons of mineral per fathom. 130 fathom east back stope No. 2 was stopped 36 feet by four men at £40 per fathom, and yielded 1½ tons of mineral per fathom. 130 fathom east end from 120 east wince No. 2 was driven 17½ feet by two men at £65 per fathom, and the lode gave here and there some good portions of mineral, but the present forecast is poor. 130 east wince No. 1 is the continuation of the 120 east wince No. 2, and it was sunk 21 feet by eight men at £160 per fathom, and the lode yielded 15 cwt. of mineral per fathom,

but the present mineral is poor. 120 fathom west back stope No. 1 was stopped 12½ feet by two men at £80 per fathom, and yielded 1 ton of mineral per fathom. 120 fathom west back stope No. 3 was stopped 24 feet by two men at £30 per fathom, and yielded 1 ton of mineral per fathom. 120 fathom west back stope No. 3A was stopped 26 feet by two men at £28 per fathom, and yielded 1 ton of mineral per fathom. 120 fathom east back stope No. 1 was stopped 19½ feet by two men at £25 per fathom, and yielded 1 ton of mineral per fathom. 110 fathom east end was driven 9½ feet by two men at £65 per fathom, thus being 929½ feet as total east of the engine shaft, and the lode is yet poor. 110 fathom east end north branch was driven 10 feet by two men at £65 per fathom, and it yielded 15 cwt. of mineral per fathom. 110 fathom west end north branch was driven 13 feet by two men at £70 per fathom, and it continues to yield 15 cwt. of good grade mineral per fathom. 90 fathom east end was driven 16½ feet by two men at £60 per fathom, thus being 1112½ feet as total east of the engine shaft, and the lode is yet poor. 90 fathom east bottom stope No. 2 was stopped 30 feet by two men at £23 per fathom, and yielded 10 cwt. of mineral per fathom. 90 fathom east back stope No. 2 was stopped 30½ feet by two men at £20 per fathom, and yielded 2½ tons of mineral per fathom. Shallow adit was driven 28 feet by four men and a boring machine at £70 per fathom, thus being 321 feet as total west of the crosscut, and the lode is yet poor. West end from new crosscut was driven 4 feet by two men at £110 per fathom, and the lode is unchanged.—Real de Frias, 35 fathom west end north branch was driven 16 feet 6 inches by four men at £60 per fathom. This is suspended, and driving is resumed upon main lode for current month. 35 fathom east end was driven 12 feet 10 inches by four men and boring machine at £90 per fathom, and the lode continues tight to work, and yet poor.

CONSOLIDATED GOLD MINES OF WESTERN AUSTRALIA.—The following fortnightly report on the Coongan Mine, dated July 29, has been received from the mines manager (Mr. Walter Marsh):—I beg herewith to submit report of work done on the mine for fortnight ending July 29. Underlay shaft has been extended 9 feet, total depth 256 feet 3 inches. The ground is much fissured and broken, the quartz on the south side is small, being 3 inches wide, and is not at present payable. All work on this mine has been delayed this fortnight on account of the holidays.—75 feet level. No work can be done in this level until the ventilation is improved by an air shaft. 150 feet level has been extended 8 feet on contract, total length 71 feet 3 inches. Ground still very hard and tough. The quartz on hanging-wall is 2 feet thick, value 17 to 25 dwt. gold per ton. Air shaft has been sunk 13 feet, total depth 13 feet. We ought to communicate in another 12 feet. Prospecting trench on the eastern side has shown a strong reef 2 to 4 feet thick lying very flat, the highest value so far being 7 dwt. gold per ton. Quartz at surface 240 tons.—Well. Timbering is now completed and the well cleaned out. The bottom is now very hard ground, which, to all appearance, is keeping back the main supply.—Machinery. The concrete foundations for mills are now ready to receive bad-logs, and engine foundation is in hand. An additional mill, ore-feeder, &c., have been ordered. Health of the camp is good. Rain has fallen within the last two days.

BIG BLOW.—The following fortnightly report dated August 27, has been received from the mine manager (Mr. W. M. Vivian):—I beg to report that for the past fortnight the 5 stamp battery has been working in a very intermittent fashion, the various causes of which have been alluded to in my previous communications. It has become impossible to do any more with the hired engine, and I have now suspended crushing until we get the main battery in going order. Mr. Harrington has not yet completed his clean-up of the result of the crushing in time for to-day's mail, but I hope to forward it by next mail. Meantime we are pushing on the erection of the main battery, building-in boiler at the water shaft, fixing pump, saw-bench and engine.

WENTWORTH EXTENSION.—Report dated August 24:—Main shaft Carroll's No. 2 sunk 11 feet during week; total depth, 130 feet. Without change.

METAL TRADE STATISTICS.

SEPTEMBER, 1895.

COPPER.

(From Messrs Henry R. Merton and Co.'s Circular for September, 1895).

		Sept. 26, 1895.	Sept. 16, 1895.	Aug. 31, 1895.	1894.	1893.	1892.
STOCKS IN ENGLAND AND FRANCE:—		Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Liverpool and Swansea, Chili Bars	...	40,149	40,022	42,472	34,732	59,167	31,357
" " Chili Ingots	...	451	485	510	826	709	13
" " Chili Ores and Regulus (fine)	...	2	2	2	25	193	13
" " Other Stuff (fine) & English Copper	5,177	5,233	6,257	6,048	4,860	9,504	
London (including landing)	2,488	2,725	2,920	8,191	5,088	5,134	
Stocks of fine Copper in Havre, Rouen, Bordeaux and Dunkirk	1,151	1,268	1,371	962	4,598	4,065	
ADVISED FROM CHILI by Mail and Cable, Fine Copper	49,393	49,719	51,532	48,284	43,704	53,822	
" " Australia, by Mail and Cable, Fine Copper	2,400	3,160	2,700	2,500	3,402	2,800	
	1,050	1,110	1,100	850	800	650	
Price of Chili Bars and G.M.B.'s per ton	... 48 7 6	42 7 0	24 7 0 0	24 1 10 0	24 1 17 6	24 4 1 6	

COMPARATIVE STATEMENT.

Stock in England and France and Afloat thereto from Chili and Australia.	Price of G.M.B.	Arrivals					
		England and France.	Other Europe.	England & France from Spain and Portugal (excluding Pyrites).	Charters from Chili to Europe.	Shipments from Australia to London.	Total Deliveries.
Month ending	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
20th September 1895	52,843	46 7 6	804	3,191	837	1,379	10,930
31st August	56,432	47 0 2	2,525	912	2,852	1,850	12,214
31st July	57,817	45 7 6	3,469	5,331	1,387	2,654	13,246
20th June	58,182	42 7 6	2,128	3,945	1,776	2,100	17,424
31st May	54,211	43 0 0	2,015	2,320	442	703	8,617
20th April	54,239	40 17 6	1,608	1,930	2,318	1,811	706
31st March	53,335	39 5 0	1,632	1,599	1,151	2,981	1,250
28th February	55,190	39 0 0	2,420	1,820	1,542	1,519	1,550
31st January	54,846	40 5 0	4,626	1,229	772	2,424	1,850
31st December 1894	54,624	41 5 0	3,839	1,048	1,626	2,366	2,305
20th November	52,295	39 15 0	2,101	1,625	1,536	1,220	1,250
31st October	52,785	40 15 0	2,849	1,324	1,085	1,850	11,620
	27,057	31,721	15,542	26,976	21,950	8,060	130,587
20th September 1894	52,344	41 10 0	3,630	909	1,573	1,200	450
31st August	62,407	40 7 6	3,028	4,841	3,973	2,000	15,682
31st July	51,325	38 2 6	3,465	2,365	1,209	1,816	11,195
20th June	60,072	38 5 0	2,726	2,945	1,386	3,588	8,300
31st May	47,580	38 17 6	2,775	1,976	3,023	1,850	8,850
20th April	46,808	39 17 6	3,559	2,811	1,057	2,977	12,445
31st March	46,597	40 15 0	2,545	3,096	1,184	1,059	10,575
28th February	47,364	41 0 0	3,276				